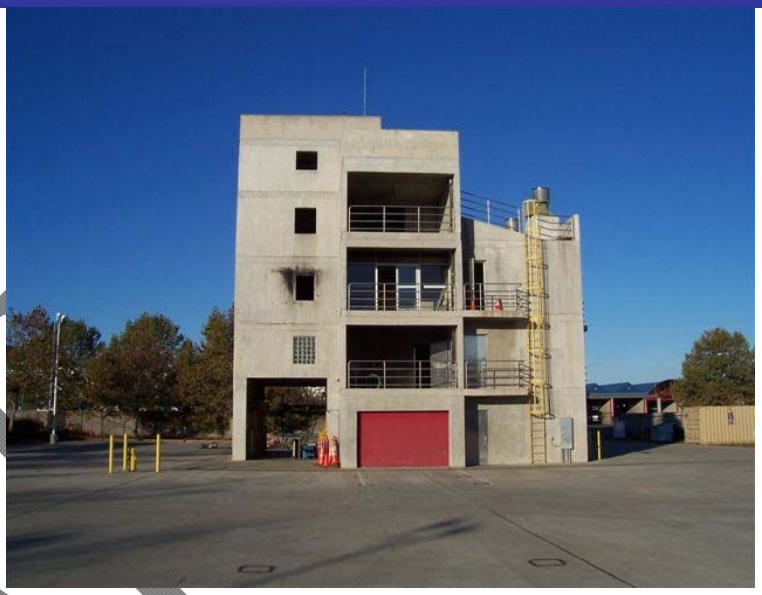
FIRE CONTROL 3B



Approved and Adopted by the Office of State Fire Marshal

Recommended for adoption by the Statewide Training and Education Advisory Committee and the State

COURSE GUIDE

April 2008

Fire Control 3B

Structural Firefighting in Live Fire Simulators

Course Guide

April 2008

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SECTION 1
COURSE DESCRIPTION

The Fire Control 3B (FC 3B) course is designed to enhance firefighting skills in combating building fires. In many cases this will be the firefighters first exposure to live structural firefighting but can also serve as an educational tool for the seasoned firefighter. It utilizes live fire simulators, both fixed and mobile for the purpose of increasing our fire fighting experience and knowledge levels. It is designed to provide information on fire behavior, ventilation procedures and techniques; search and rescue, interior attack, exterior attack, basement fire fighting, overhaul techniques, and exposure protection. These training simulators can also provide an excellent opportunity to train personnel in breathing apparatus survival.

Although there are many training scenarios that can be done in a live fire simulator, exercises utilizing the simulator to conduct a FC 3B course are limited to the standards as set forth in this manual. This manual addresses both Class "A" fueled Simulating Burn Towers and Gas fuel Simulators. Tactics and techniques may vary according to the type simulator.

This is a valuable course of instruction for all firefighters, but especially for a new fire fighter, when conducted in an organized and safe manner

Fire Control 3B Course and NFPA 1403

The National Fire Protection Association (NFPA) is not a legal authority unless a state's Occupational Safety Health Administration (OSHA) has adopted its standards. California OSHA has not adopted this (NFPA 1403) standard. Therefore the document "NFPA 1403 Live Fire Training Evolutions" should be used as another tool in conducting a FC 3B course.

If you are a State Fire Training FC 3B registered instructor you shall have direct access to the latest 1403 document. The FC 3B Instructor shall be familiar with its contents and be able to apply those items that will be of assistance in conducting a safe FC 3B course.

(Note: The California State Fire Training Manual on Fire Control 3 was used to create the original NFPA 1403 document).

Important: Read the inside cover of the NFPA 1403 and this will verify the above information.

Note: Currently, NFPA 1403 does not deal with Mobile Live Fire Simulators.

SECTION 2
INSTRUCTOR REQUIREMENTS

SENIOR INSTRUCTOR (Senior)

The Senior Instructor will have total authority for a FC 3B course. The Senior is the representative of State Fire Training Division of the Office of the State Fire Marshal. The Senior acts as a technical specialist to the Primary Instructor (Primary). The Senior may also serve as the Primary on a FC 3B course involving limited training operations. As an example, an Agency owned and operated live fire simulator.

The Senior must be kept apprised of all pre burn planning. An open line of communication shall be kept between the Senior and the Primary. The Senior will be physically present for all instructional portions of an FC 3B course. The Senior will ensure that all safety precautions are identified, planned for, noted and adhered to and that a safety plan has been developed for the course. The Senior shall review all documentation prior to the FC 3B course.

The Senior has the authority and responsibility to stop a burn exercise when adherence to the FC 3B course guidelines are being violated. This may include notification to the Primary that State certification of the burn will be denied. If this occurs, the Senior will immediately notify the jurisdiction having authority for the FC 3B course. The Senior will also notify State Fire Training as soon as practical.

The Senior will oversee completion of all instructor evaluations utilizing ICS Form 226. The Senior will complete a course evaluation on the Primary that may or may not be accompanied by a letter of recommendation to the position of Senior Instructor. The Senior will also collect and review all Primary documentation. This will include the performance of all instructors involved and any occurrences, good or bad, that may lead to better delivery of future FC 3B courses.

A copy of these reviewed documents will be sent to SFT within 15 days of course completion.

THE SENIOR SHALL ENSURE THAT DOCUMENTATION AND REPORTING OF All INJURIES, NO MATTER HOW MINOR, ARE SENT TO STATE FIRE TRAINING AND WITHIN 2 WORKING DAYS OF THE INJURY.

Note: Utilize the Personal Injury and Illness Investigation Report located in Appendix B of this guide.

Minimum Qualifications Required For A Senior Instructor:

To qualify as a FC 3 Senior Instructor, the applicant shall satisfy the following criteria.

1. Instructional Training (any one of the following)
   a. No additional requirements

2. Occupational Experience (all of the following)
   a. Shall be currently registered with State Fire Training as a Primary Instructor in both FC 3A and FC 3B.
   b. Three letters of recommendation for structure fire simulator facilities from three separate registered State Fire Training Senior FC 3 Instructors.
   c. Three letters of recommendation in acquired structures from three separate registered State Fire Training Senior FC 3 Instructors.
   d. Shall have completed the FC 3 Senior Instructor Task Book (all modules within 36 months of initial entry)

Registration Process

3. Resume evaluation

   Applicant shall submit a completed application package for review that includes all of the following:

   a. Application for registration form
   b. Up-to-date resume of education, position/rank, and experience

c. Verification of instructor training
d. Verification of occupational experience
e. Verification of coursework
f. Completed FC 3 Senior Instructor Task Book
g. All letters of recommendation for the position
h. Approved through Pace II

Written verification of your occupational experience shall be submitted on department letterhead and signed by your supervisor and/or Fire Chief

Fire Control 3B Primary Instructor (Primary)

Primary Instructors are responsible for planning management and delivery of the FC 3B course.

All FC 3B courses should have a Primary designated. A Senior may act in the capacity of Primary on smaller, less complex classes. A Primary and Senior or a Senior acting in a Primary's capacity shall be present during the entire course.

The Primary is responsible for all documentation of the course. This includes injury reports, rosters and instructor evaluation forms. The Primary shall evaluate the instructional staff before, during and after the course has been delivered. The Primary will also document any unusual events that occurred during the course, both good and bad, that may benefit future FC 3B courses. All documentation will be given to the Senior to be reviewed and forwarded to SFT within 15 days of course completion.

Minimum qualifications for a Primary FC 3B Instructor

To qualify as a FC 3B Primary Instructor, the applicant shall satisfy the following criteria.

1. Instructional Training (any one of the following)

a. Completed Fire Instructor 1A and 1B
b. Have a valid community college teaching credential
c. Completed the UC/CSU's 60-hour "Techniques of Teaching" course
d. Completed the NFA's "Fire Service Instructional Methodology" course
e. Completed Four semester units of upper division credit in education materials, methods, and curriculum development

2. Occupational Experience (all of the following)
   a. Completed FC 3B.
   b. Three letters of recommendation from 3 registered Senior Instructors as documented in the Position Task Book
   c. Shall have completed the FC 3B Primary Instructor Position Task Book (all modules within 36 months of initial entry)
   d. Shall have a minimum five years experience in subject matter
   e. Have attended and passed I-200 course

   Written verification of your occupational experience shall be submitted on department letterhead and signed by your supervisor and/or Fire Chief

Registration Process

Resume evaluation

Applicant shall submit a completed application package for review that includes all of the following:

a. Application for registration form
b. Up-to-date resume of education, position/rank, and experience
c. Verification of instructor training
d. Verification of occupational experience
e. Verification of coursework
f. Completed FC 3B Primary Instructor Task Book
g. All letters of recommendation or evaluation for the position
h. I-200 certification

Written verification of your occupational experience shall be submitted on department letterhead and signed by your supervisor and/or Fire Chief

ASSISTANT INSTRUCTOR (Assistant)

Assistant Instructors are responsible for teaching their portion of the course (Subject matter expertise) without supervision. The Senior and the Primary will monitor, evaluate and complete the evaluation form on the Assistant and forward it to State Fire Training. Primary's should encourage Assistants to broaden their areas of expertise through instruction of various portions of a FC 3B course. This will enhance the Primary's ability to develop a cadre of qualified instructors for future FC 3B courses. However if the Assistant chooses to stay within their area of expertise it should be allowed.

3. Instructional Training (any one of the following)
    a. Completed Fire Instructor 1A and 1B
    b. Have a valid community college teaching credential
    c. Completed the UC/CSU's 60-hour "Techniques of Teaching" course
    d. Completed the NFA's "Fire Service Instructional Methodology" course
    e. Completed four semester units of upper division credit in education materials, methods, and curriculum development

Minimum qualifications for an Assistant Instructor:

- Completion of a FC 3B Course.
- Subject matter experience
- Demonstration of instructional ability
- Instructor 1A and 1B desired.

The Primary Instructor may require verification of the above listed qualifications.

INSTRUCTOR TRAINEE

This is the level at which a student starts into the FC 3B instructional cadre. This position may instruct portions of a FC 3B course under the immediate supervision of a Primary or Assistant Instructor. They may also fill positions such as Stoker, Pump Operator, Staging Area Manager, Medical Staff, Personal

Accountability, Communications Staff, or any other position that the person may qualify for as recommended by a Senior, Primary, or Assistant Instructor.

Minimum Qualifications for a Trainee Instructor

- Completion of a FC 3B course.

SECTION 3
ACQUIRING, ACCEPTANCE AND INSPECTION OF LIVE FIRE SIMULATORS

ACQUIRING

There are several methods of obtaining live fire simulators for use for FC 3B classes. Some Agencies have built fixed facilities and may be willing to allow neighboring departments access for training. There are mobile units available from private and public sources.

There may be costs associated with both fixed and mobile simulators, which are normally used for maintenance of the simulator, including an operator. Check with local and regional agencies to find what resources may be available.

ACCEPTANCE AND INSPECTION

After the simulator has been located, a decision must be made whether or not to accept this offer. This requires that a survey of the site and or facility to inspect the general condition of the simulator and facilities.

Establish amicable roles and responsibilities between the host department and the Live Burn Simulator Operator. For example;

- Type, quantity and materials to be burned and
- Responsible party for the clean up of the remaining material
- Refer to your “Live Fire Training Packet” for more information (See Appendix)

FIXED AND MOBILE LIVE FIRE FACILITIES

Most agencies will have a maintenance and inspection program for their live fire simulator following manufacturers' suggested guidelines. The Department operating the live fire simulator could additionally have their own "Standard Operational Guideline's".

When planning for Mobile Live Fire Simulators, check with the owner/operator and determine minimum clearances, both overhead and adjacent exposures. Additionally, prevent impact from smoke to surrounding neighbors, roadways, schools, and medical facilities. Ensure the location will have adequate water, room for apparatus and fire equipment.

Before each live fire evolution, the burn building should be visually inspected for any damage. All entrances and exits should be checked for proper operation. Additionally, windows, shutters, mechanical equipment, manual or automatic sprinklers and standpipes necessary for the live fire training evolution should be operated to ensure they operate completely. The operator should guarantee that all safety devices including thermometers, gas monitors, evacuation alarms and shutdown devices are fully operational. The instructor should address and document all problems and corrective measures that are taken.

Do a walk around of the facility and look for anything that could injure firefighters, or damage PPE. Take corrective action as necessary and document. During the Instructors' walk around, check for any unexpected exposures, and take corrective measures. Debris hindering the access or egress of fire fighters shall be removed prior to the beginning of the training evolution.

Live Fire Simulators using LPG fuels may need a refueling source. Work this out in advance to avoid unwanted delays. Class A fueled simulators may have requirements/limitations, on the type and BTU yield of the material burned. Plan for this in advance, using the guidelines of the Simulators operator, or manufacturer's guidelines, stockpiling enough fuel for your course of instruction.

WATER SUPPLY:

Find out the status of the water supply. Is there adequate volume and pressure? Will streets and roads have to be closed to protect hose lines? If no local water source is available, consider the time necessary to shuttle water to the burn site.

Check with the operator of the simulator to determine if there are any requirements for direct water hookups with the simulator, including on board suppression systems, standpipes or other water needs.

Plan for fireflow from two separate means of delivery, such as two engines or one engine and a wet standpipe. In areas of limited water supply, apparatus "tank water" may be used as a back-up supply.

TRAFFIC:

Finally, check the traffic conditions. Give consideration to the traffic flow and times of peak usage. If a freeway is near, it may cause serious problems. Training burns have totally disrupted traffic and caused accidents on the freeway system. If necessary, plan to burn only during light periods of traffic. A check with the CHP can help determine these times.

SECTION 4

SURVEYING THE SIMULATOR FOR TRAINING VALUE

Survey the Simulator on the burn site for possible exercises that could be conducted or hazardous situations that need special attention. Be creative; use the additional elements of instruction to expand the student's knowledge. Determine the experience level of the students and adjust the training accordingly. The required elements of a FC 3B course should be of primary consideration during this phase.

- Mandatory Exercises;
  - Fire Behavior
  - Interior Attack
  - Exterior Attack
  - Ventilation

- Additional Exercises;
  - SCBA Confidence Course (Smoke Room),
  - Fire Cause and Origin
  - Attic Attack
  - Basement Attack (can be a dangerous evolution if not done properly)

Here are some examples of additional exercises you may want to consider:

- Salvage Operations
- Search and Rescue
- Use of Power and Hand Tools
- Use of Various Nozzles and Patterns including Master Streams
- Overhaul
- Exposure Protection
- Arson Training; For the investigator; For the fire fighter
- New equipment tests
- Indirect versus Direct Attack
- RIC training, Firefighter Rescue, including Accountability
- Thermal Imaging Camera (TIC) training

Hazards to be considered may include, but are not limited to**:**

- Exposures: other buildings, vegetation, and vehicles

- Overhead wires including power, telephone and cable (contact appropriate utility company for assistance)
- Traffic (especially freeways)
- Trees, Shrubs and other Landscaping Hazards
  - impedes egress and/or visual monitoring of the exercise
  - retaining walls and drop offs

- Weather Conditions (daily wind patterns), research temporarily relocating affected occupants during the burning evolution
  - Spot Weather Forecast Sources:
  - National Weather Service www.nws.noaa.gov
  - The Weather Channel www.weather.com
  - National Oceanic and Atmospheric Administration
  - (NOAA)www.noaa.org
  - Logging personal observations is recommended on an ICS-214

- Holes (floor, walls, and roof)

- Septic tanks (there is nothing worse than having an engine buried up to its running boards in a septic tank)
  - Leach lines

- Exits in Live Fire Simulator

- Fuel Types, such as LPG, Natural Gas, or Class A Materials

After the survey has been made, exercises identified, and hazards indicated, the Incident Commander (IC) can turn this information over to the Planning Section Chief to develop a map of the training site. The mapping procedures will be discussed in the next section.

SECTION 5

RECOMMENDED PROCEDURES FOR WORKING WITH THE LOCAL AIR QUALITY MANAGEMENT DISTRICT (AQMD)

The local AQMD must be contacted early in the planning phase of the course. It is recommended to have AQMD personnel be part of the burn planning and organization. Include that staff member in the communications circle, and invite them to witness the FC 3B course. It is possible that AQMD may not require the permit process pending on how the Live Fire Simulator is fueled. Each jurisdiction may have different regulations regarding fixed and mobile live fire simulators.

If the course is to be conducted in a high smog area, try to schedule burns during a low smog episode time of the year.

An upfront and honest exchange of information between FC 3A and FC 3B Instructors and AQMD staff is critical. AQMD representatives should be told specifically what the desired result of the training is. Explain specifically what type of fuels are to be used, the anticipated size and duration of each burn, as well as contingency's for the day's training. Welcome them to become a part of the burn. (safely) Leave no room for AQMD to be surprised by the training burn in any way.

When appropriate, determine if a variance is necessary. A variance will allow for burning on a "No Burn" day. AQMD should be approached on this matter only after a burn permit has been obtained. A positive and professional interaction between FC 3B personnel and AQMD is essential for the success of the program.

If the course is conducted on a "No Burn" day without a variance, a citation may issued by AQMD. "Spare the Air" days are exempt from a variance, and all burning must be cancelled.

The AQMD office may require a presentation at an AQMD Hearing Board.

Have all documentation and presentation materials prepared prior to going before the Board. The information that will be requested includes the location of the burn,

organizations involved, dates of the burn, number of students, material**(s)** to be burned, etc. This information is available from ICS Planning documents, such as an Incident Action Plan (IAP).

When appearing in front of the AQMD Hearing Board, look professional, be on time and make sure to have copies of the burn plan (IAP) for the Board and the Board's attorney. Seek the assistance of AQMD in this matter, and be certain to have an AQMD consultant present. Consider contacting the Board's attorney prior to the hearing with the AQMD consultant's support. Attorneys don't like surprises in front of the Board. Most AQMD Board hearings have granted variances to fire departments for training purposes.

SECTION 6

DOCUMENTATION AND RELATED PAPERWORK, RECORDS, AND REPORTS

The next step is to complete the necessary paperwork. There are several items that must be considered and some documentation to be completed. Local Air Quality Management District (AQMD) guidelines will dictate the necessary documentation and permits required for simulator training. (See "LIVE FIRE SIMULATOR CHECK LIST" for assistance).

Suggested material:

- Federal EPA, California Air Resources Board and Local AQMD approval
- AQMD Confirmation of a Training Variance in the absence of a "No Burn" day
- A burning permit from the jurisdiction in which the training is taking place if necessary.
- Operational Guidelines from the Manufacturer or Operator of the Live Fire Simulator

All paperwork should be kept as a permanent record by the agency conducting the course with copies to the agency having jurisdiction, should any question regarding the training exercise ever arise.

Suggested material for the person responsible for conducting the FC 3B includes:

- Written notification to the chief of the jurisdiction in which the burn is to be conducted and to the chiefs of the other participating agencies. The letter should contain the following information:
    - What is going to be burned
    - Where the burn is located
    - When the burn is going to take place

- Senior Instructors' names
- Incident Commander's name
- Safety Officer's name
- Primary Instructors' names
- A short description of the specific burn objectives
- An agenda of the actual burn
- A list of all the agencies participating

- Written documentation from the participants chiefs on department letterhead to include the following;
  - Authorization to attend the training, including a statement of insurance coverage for the participant.
  - Statement of competency to attend "Live Fire Training"
  - Current fit test documentation.

- The participants agency must also provide the student with:
  - Compliant SCBA in good repair.
  - Compliant PPE in good repair.

- Federal EPA, California Air Resources Board and Local AQMD approval.
- AQMD Confirmation of a Training Variance in the absence of a No Burn" day.
- A burning permit from the jurisdiction in which the training is taking place

State Fire Training is available to assist you with large and complex live fire safety training burns. For any additional assistance please submit a letter of request to State Fire Training that includes the date(s) of the burn, location, description of the live fire safety training burn, the specific request(s) and the contact information. A Training Specialist will then contact you for an appointment.

SIMULATED STRUCTURE BURN CHECK LIST

Project Name:_____ **Date:**_____

Location:_____

Contact Person(s):_____ **Numbers:**_____

Project Description:_____

SECTION 6

Documentation and Related Paperwork, Records, and Reports

Check List

Item:	Performed by	Date and initial
	Responsible:	Date:
1. [ ] Determine Training Value	Fire Agency	_____
2. [ ] Inspect Structural Integrity	Fire Agency	_____
3. [ ] Air Pollution Control Burn Permit	Fire Agency	_____
4. [ ] Schedule with State Fire Marshal (FSTEP)	Fire Agency	_____
5. [ ] Political Entities Notified (Mayor, Manager, etc)	Fire Agency	_____
6. [ ] Ambulance Company notified	Fire Agency	_____
7. [ ] Notification to Water Department	Fire Agency	_____
8. [ ] Incident Action Plan (Safety Plan)	Fire Agency	_____
9. [ ] Notification to Neighbors	Fire Agency	_____
10. [ ] Notification to Law Enforcement	Fire Agency	_____
11. [ ] Portable Toilets	Fire Agency	_____
12. [ ] Fuel Supply (Class A Fuel, LPG, Natural Gas)	Fire Agency	_____
13. [ ] Rehab Area (Portable Shade, Drinks)	Fire Agency	_____
14. [ ] Calibrate Gas Sensors	Fire Agency	_____
15. [ ] Meals and Drinks	Fire Agency	_____
16. [ ] Incident Briefing	Fire Agency	_____
17. [ ] Safety of Scene During Operations	Fire Agency	_____
18. [ ] Incident Debriefing	Fire Agency	_____
19. [ ] Security of Scene After Burning, Clean Up	Fire Agency	_____
20. [ ] Instructor Evaluations and Documentation	Fire Agency	_____

SECTION 7

NOTIFICATION INFORMATION AND CHECKLIST

When planning a FC 3B training exercise, all agencies, citizens, and news media directly or remotely associated with the training should be notified. These would include, but not be limited to:

- City Manager
- Mayor
- Board of Supervisor area representative
- Local AQMD, CARB and EPA*
- News media
- Local ambulance transporting agency for a possible standby
- Coastal Commission
- Police and fire agencies in the local area
- Water department
- Public works department
- California Highway Patrol
- U.S. Forest Service
- Nearby schools, churches, and parks
- Utility companies
- Neighboring residents and businesses

One of the most important groups to notify are the adjacent neighbors. These "neighbors" include industrial as well as residential.

The contacts should be made by the Public Information Officer (PIO). As these contacts are made, log the agency, telephone number, person contacted, and their reaction. (See Illustration # 1 on the following page)

The following information should be given to everyone notified:

- Nature of the activity
- Reasons for the activity
- Location of the activity
- Schedule of the activity
- How the training is to be conducted

- Department contact for information

An informational flier may be dispersed to residents in the area around the burn site. This may be accomplished by local volunteers, engine companies, explorer scouts, etc.

Failure to notify those concerned can cause embarrassment and unnecessary problems to the agency having jurisdiction. A meeting of area residents and businesses will help alleviate their concerns.

SECTION 8

DEVELOPING INSTRUCTIONAL STAFF

A Senior Instructor must be present for all FC 3B courses.

Probably the easiest way to develop the instructional staff is to gather the training officers from the agencies that are going to participate in the burn. Another source of instructors may be from the local training officers' association or from State Fire Training's FSTEP instructor list, (http://osfm.fire.ca.gov/TrainingInstructor.asp)

Using Associate Instructors with specific areas of expertise is an excellent way to introduce firefighters to instruction and expand the knowledge base of participants.

Position Task Books can be partially completed on a FC 3B for all of the listed examples such as Staging Area Manager, Check In/Status Recorder, Division Group Supervisor, Resource Unit leader, Documentation Unit Leader, Situation/Status Unit Leader, Medical Unit Leader, Branch Director, Safety Officer, Public Information Officer, and Incident Commander. Consider using ICS Trainees as a resource for filling organizational positions.

Once the instructional staff has been assembled, define the objectives of the burn. Make a tour of the burn site and identify staff positions to start the planning process.

Identify any potential hazards or concerns and mitigate and or correct the hazards as necessary for safety. Encourage the discussion of any safety items from instructional staff. Obtain feedback from instructional staff to ensure everyone understands what is expected during the training evolution. Utilizing ICS position titles provides for clarification of roles and responsibilities.

At the second meeting, staff and needed resources should be identified; this planning should start at least one month before the course starts.

Requested resources should include those necessary to accomplish the required training exercises and any additional exercises identified from Section 5 of this manual.

Staff positions and descriptions are outlined in Section 9 of this course guide as "Staff Organization and Description."

SECTION 9

STAFF ORGANIZATION AND DESCRIPTION

Organization and management of the course should be considered as part of the overall training process. The Incident Command System (ICS) should be utilized for the organizational framework for managing the course.

Command Staff

Incident Commander (IC)

The IC is usually from the agency in whose jurisdiction the course is located and is responsible for everything that does or does not happen. Any position not filled in the system, is the IC's responsibility. The IC may have an aid. This position conducts all planning meetings before, during, and after the course.

Safety Officer and Staff (SOFR)

All FC 3 classes are required to have a safety officer and are responsible for reviewing the course plan and site usage. There must be a safety staff member in attendance during all exercises. The safety staff has total authority to stop any exercise, where eminent danger to students may be present. They also assist during the critique of the exercise. Safety staff members must be familiar with fire behavior.

Information Officer (PIOF)

This position is not always necessary, especially on one building or one day burns. However, on large burns of several buildings or long duration burns, this is an important position. The IO starts his/her operation during the first planning meeting and is responsible for notifying the news media and the neighbors in the area as to the particulars of the course. The IO should be available during the entire course to handle news media and neighbors' inquiries.

Liaison Officer (LOFR)

Answers inquiries from other agencies, i.e., fire, police, AQMD, water department, etc. This position is invaluable during larger courses involving many agencies.

Operations Section Chief (OSC2)

Supervises the various exercises during the course. Oversees all exercises being conducted at the site and ensures the instructors are conducting each exercise safely and properly. Assists Planning Section Chief in outlining the next day's activities. This position may be filled by the Senior Instructor.

Branch Director (BOD2) when activated, are under the direction of the Operations Section Chief (OPS), and are responsible for the implementation of the portion of the Incident Action Plan (IAP) appropriate to the Branches.

Division/Group Supervisor (DIVS)

A DS/GS is an instructor for a particular division/group of the course and is in charge of that portion of instruction but may have other instructors assisting. The DS/Gs also functions as an additional Safety Officer.

Logistics Section Chief (LSC2)

Obtains all materials and services necessary for the course. This position's operation starts during the first precourse planning session. The Logistics Chief should have a staff for large burns. On small burns, however, the Logistics Chief may perform all the functions of the logistics section.

Supply Unit Leader (SUPL)

Collects all equipment used on scene. Insures that proper identification is on the equipment. Issues all equipment to burn exercises. Accounts for all equipment before returning it to its agency. Reports on all damaged or missing equipment. Advises as to equipment needs for each class period.

Ignition Officer

Provides for ignition and burn materials for all Class A burn exercises. Ignition Officer may have personnel for assistance. These personnel may also function as light off personnel for a division if necessary.

Medical Unit Leader (MEDL)

Insures proper medical equipment and personnel are on the training site to care for any injury that may occur. Arranges for transportation of the injured. Advises local hospitals of the possibility of injuries prior to the course. Makes reports on all injuries no matter how small. Completes the ICS 206 form.

Water Supply Officer

Establishes fire flow requirements for the course. Advises on locations and amounts of water available. Makes estimates of amount of water to be used for the entire course. Supervises the laying of supply lines. Establishes pumping apparatus requirements and placement. This position may be filled for only a short time each day. The Water Supply Officer must be present during the planning session.

Communications Unit Leader (COML)

Obtains communications equipment. Assigns operational prerequisites. Issues and collects radio equipment, and after use is accountable for same. Assures that portable radios are recharged for each training period. Issues a copy of the communication plan to all staff officers. Completes the ICS 205 form.

Note: It is recommended that three frequencies be utilized on larger operations. These are a command frequency, a tactical frequency, and a support frequency. This may be altered to fit the need.

Finance/Administration Section Chief (FSC2)

Accounts for all course costs, establishes fee collection procedures, if applicable, and insures that all bills are paid. Makes a total financial report for the course. This position may have a deputy. The deputy should be informed of all aspects of the course regarding finance requirements.

Planning Section Chief (PSC2)

Supervises the planning section. Advises personnel of their responsibilities. Develops the course plan. Ensures that all staff are aware of the plan and conducts the evening planning sessions. Maintains all records for the course.

Check-In/Status Recorder (SCKN)

Sets up the registration site and directs student and staff sign-ups. Prepares a daily report for the plans chief. Assigns division or team numbers and identifies Division and Team Leaders. Places proper markings on all staff officers and students. Prepares roster for Certificate coordinator ~~Unit Leader~~ and provides display for the Incident Command Post (ICP) of various assignments. May also work as a Demobilization Unit. One method of tracking students during Live Fire training incidents is shown below, using a chalk or white board to track student progress.

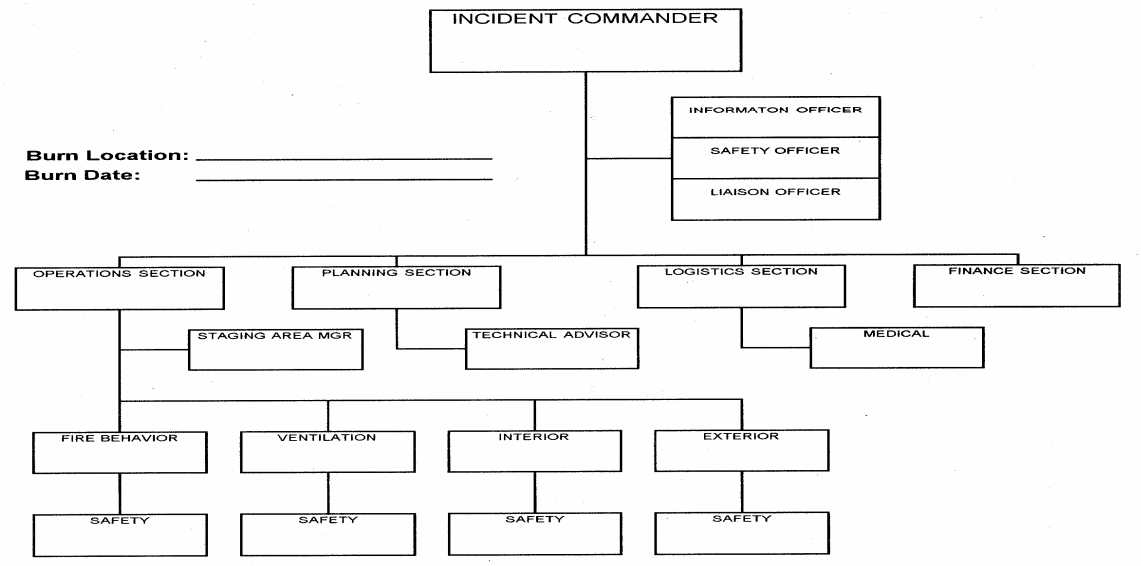
Documentation Unit Leader (DOCL)

Obtains students and staff names and total hours. Coordinates certificate preparation, issues certificates, and compiles report of certificates issued.

Map Unit Leader

Makes maps of training area identifying division of assignments and locations for important sites (ICP, medical station, water supply, communications, rest area, etc.) Provides copies for each Division/Group Supervisor or Team Leader. Provides display in ICP of training divisions and identifies building use or destruction for each planning session.

These positions have been described as they apply to the FC 3B course. Filling each of the preceding positions is optional depending upon the size and needs of the burn. (See Illustration below)



The use of an Incident Action Plan will assist your organizational abilities greatly by identifying key overhead and safety positions, resources, span of control, communications, emergency plan, medical treatment, organization chart and mapping.

For further descriptions of these positions, refer to the specific ICS position manual or the ICS Field Operations Guide I-420. Each position may have additional responsibilities. Again, decide what will work for this course of instruction.

Student Organization

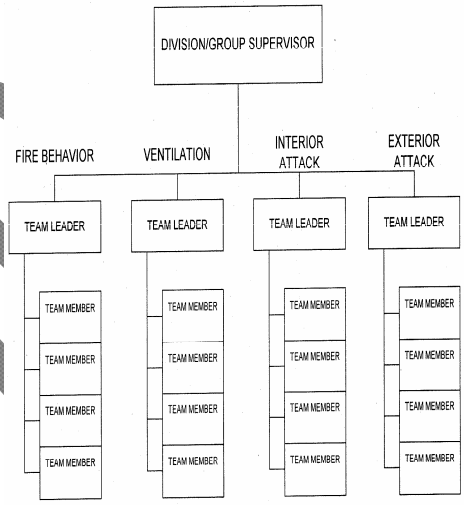
On large-scale scenarios involving multiple buildings, you may wish to conduct a separate exercise for each building. These buildings may be organized as divisions with a Division/Group Supervisor assigned for span of control. Remember, in the ICS, divisions are assigned for geographical areas and groups are organized for functional responsibility.

To help organize the students into workable units, it is recommended that they be divided first into divisions/groups and then each division/group divided into teams. A Division/Group Supervisor is part of the instructional staff and must be at least an

Associate Instructor. Each division/group consists of four teams of four students each. Each team has a Team Leader. The Team Leader should be the most experienced student on the team and reports to the Division/Group Supervisor.

Team Leaders are given specific assignments for the exercise. For example, one team on attack, a second team on back-up, and the third team works ventilation, and the fourth team takes care of fueling the burn. The Division/Group Supervisor then rotates the teams through the various assignments until all have completed the exercise.

When finished, the division/group is released by the Division/Group Supervisor and reports to the Staffing Area Manager for reassignment. This procedure works very well and ensures that students have an opportunity to be involved in all training exercises. (See Illustration below)



Identification of Personnel for Accountability

A means of accountability for all participants an instructional staff will be used on all FC 3B courses. The Senior and Primary Instructors shall be clearly identified on the course grounds. The following system may be of assistance. Place a piece of duct tape on the rear dome of each student's helmet. Use a waterproof, wide-tip marker to make the identifications.

BLACK: NUMBER AND LETTERS

RED: TEAM LEADER

Using 1" colored tape to mark staff members is also an option. The tape is placed horizontally on each side of the dome of the staff member=s helmet.

Incident Commander:	2 Blue Stripes
Operations Section Chief:	2 Red Stripes
Ops Staff:	1 Red Stripe
Team Leader:	1 Red and 1 Green Stripe
Safety Officer:	2 Green Stripes
Safety Staff:	1 Green Stripe
Logistics Section Chief:	2 Brown Stripes
Logistics Staff:	1 Brown Stripe

Note: If anyone is wearing a red helmet that requires a red stripe, first use a piece of duct tape then add the red stripe through the middle of the duct tape.

Planning Section Chief and staff and Finance Section Chief are usually marked with a piece of duct tape with their position title on each side of their helmets.

All on-site personnel should be identified including visitors, photographers, and news media. This will help control unauthorized personnel from entering the site. These identification markings are possible recommendations, but only if they fit your situation.

SECTION 10

MAPPING THE BURN SITE

The Plans Section Chief (PSC) is responsible for developing a map showing all pertinent information for the burn. The PSC may assign a Situation Unit Leader. Here is a list of considerations:

- All building sites
  - Identify each building
  - Locate Septic Tanks, Wells
  - Identify and provide for collapse zone

- All exposures
  - Include power lines, vegetation, trees, other buildings
  - Show flammable liquid storage areas
- Property boundaries
- Roads and access to the burn site (Include traffic plan)
- Check-in site
- Incident Command Post (ICP)
- Staging area
- Water supply, hydrants with GPMs available and static pressure, pools or other static water supply with approximate capacity, and location of portable water supply placement (fold-a-tanks, large tanks, etc.)
- Supply Unit Leader location
- Student parking

Additional items to map should include exits of the burn buildings, and any potential hazards.

Once this map is completed, it should be reproduced both as a large map and many small maps. The large map will hang in the ICP for reference. The small maps can be utilized by Command Staff, Division/Group Supervisors, and Team Leaders for a ready reference.

SECTION 11
THE EIGHT BASIC EXERCISES

There are four basic exercises that must be completed in order for students to receive SFT certification in FC 3B. There are four additional exercises that may be There are four additional exercises that can be added if resources and time will allow. Each exercise will be discussed in the following sections.

The 4 mandatory exercises

- Fire Behavior (Mandatory)
- Ventilation Techniques (Mandatory)
- Interior Attack (Mandatory)
- Exterior Attack (Mandatory)

Additional exercises.

- SCBA Survival Techniques, Confidence Course
- Attic Attack
- Fire Cause and Origin
- Basement Attack (if available)

As structures become more and more difficult to acquire, the instructor must attempt to utilize all acquired structures to their maximum potential. Other potential training exercises that may occur in the building prior to a FC 3B course include but may not be limited to:

- Forcible entry training
- Selective breaching and breaking
- Self rescue techniques
- Thermal Imaging training
- RIC training
- SCBA training

SECTION 12
FIRE BEHAVIOR

This is the first live fire exercise that the students will attend. This section of a FC 3B class will be the foundation of all fire behavior witnessed by students for the rest of the day's events. The instructor should attempt to illustrate as many aspects of fire behavior to the students as possible so as to continue to build upon them throughout the class. The number of students in the class will determine the potential need for more than one behavior class. It is conducted in a live fire situation, in a designated training room.

The training room will be dark and potentially dangerous. All measures must be taken to remove any and all hazards prior to the exercise. A minimum of 2 exits shall be identified for all students. These exits may be marked both on the floors and walls. The instructor for this exercise shall be capable of providing planned, expected, and desired fire behavior before being assigned to this exercise. The instructor shall discuss anticipated fire behavior of the specific room based on fuel, construction, and all other variables and then illustrate this behavior with examples after ignition. Key points that do not occur during the various demonstrations can be discussed outside following the exercise.

During this exercise, you will be dealing with fire development from incipient to rollover stages. At the same time, you will be demonstrating proper application of various nozzle patterns, and the effects of water application (steam production, thermal influence, etc). You will also have an opportunity to demonstrate interior ventilation techniques using nozzle streams.

Items needed for this exercise:

- Pressurized water extinguisher or hand pump can
- Attack line
- Back-up line
- Ignition Officer with hook
- Instructor staffing near exits

Having the room set-up for ventilation using shutters, doors/windows will allow you to demonstrate air flow and vertical and horizontal ventilation. Using the pump can and teaching anchor points will demonstrate the small amount of water needed to control fire. By using a properly constructed crib allowing airflow, you can knock

down the fire and than allow the fire to build for your next demonstration. When using pallets for this class it can be very difficult to get the fire burning again if all the starter fuels are consumed too early.

NOTE: It is recommended that a properly constructed wood crib be used for the Fire Behavior component. This will allow you to demonstrate air flows, ventilation, extinguishment, and fire growth.

Room set-up; make sure that the training room is prepared for the class to be on floor and remove all hazards that could harm a student or PPE. Ensure exits are properly marked, ensure that the water supplies for both the attack and back-up lines come from two different delivery sources unless water system is properly engineered with adequate flows for fire suppression with an automatic back up system.

Speaking Points:

- Factors influencing fire behavior
  - Amount of fuel
  - Type of fuel
  - Arrangement of fuel
  - Ratio of fuel to room or building
  - Ventilation
- Time temperature curve
- Types of fire classes
- BTU output
- Stages of fire
- Heat transfer
- Smoke
- Water application anchor points
- Barriers and shielding
- Nozzle patterns
- Steam production
- Air flow
- Indicators
- Horizontal and vertical thermal balance
- Ember production
- Ash production
- Flame lengths
- Flammable gases
- Overhead or atmosphere control
- Roll over

- Flashover
- Backdraft

SECTION 13
VENTILATION TECHNIQUES EXERCISE

The ventilation phase of fire fighting is second only in importance to the application of an extinguishing agent. Ventilation strategy and tactics shall be imparted to the students as a part of this exercise.

This exercise is designed to provide the student with proper methods and techniques of ventilation and an opportunity to utilize ventilation equipment. This includes using both hand tools and power equipment.

The ventilation exercise should be planned well in advance and be designed to facilitate the entire course. The instructor for this exercise should have a good working knowledge of building construction, both old and new, and show methods of determining what type of construction is utilized in a particular building. It is imperative that ventilation operations be coordinated with fire behavior and fire attack operations (Will be verbalized if simulator requires mechanical ventilation only)

Most of the time, residential buildings are the subject of a ventilation class. The classroom is on the roof. In a FC 3B class, most fixed and mobile facilities have improvised ventilation props that may include access to the fire room for realistic ventilation practice. Inspection should made by the instructors to assure structural integrity of the roof. Be familiar with the roof prop that will be used, and ensure there is a sufficient quantity of replacement panels and roof members for the instruction period.

Safety is paramount while burning is conducted beneath the ventilation exercise. A minimum of two ladders shall be in place to aid in rapid evacuation. The addition of at least one Assistant Safety Officer is necessary. The Assistant Safety Officer would be responsible for safe operations while conducting ventilation exercises on the roof.

It is necessary, when utilizing simulators and towers, that ventilation techniques be taught on a separate roof, or ventilation prop.

If utilizing pre-set ventilation props in an FC 3B class, ensure that reliable radio communications are maintained between the Ventilation Instructors and the Fire Behavior/Fire Attack Instructors. Have an operational plan for coordinated suppression and student evacuations in the event of an emergency.

Make sure you have adequate room to store tools so they will not fall to the ground and possibly injure someone.

Tools might include axes, pike poles, pulaski, rubbish hooks, power tools, sledge hammers and roof ladders. The hosting and cooperating agencies attending may influence the type of tools and operational guidelines, or techniques, utilized by their respective agencies.

All students will be in full personal protective equipment while participating in ventilation operations. If live fire exists, all students must wear an SCBA.

The ventilation exercise lecture should begin while on the ground.

The safety briefing will include travel and escape routes on the structure or simulator and communication methods that will be used while power tools are in use including the signal to evacuate.

Each student shall be given the opportunity to use ventilation tools.

To help identify hazardous areas, marking paint shall be utilized to show roof areas that should not be cut. All personnel shall be advised to avoid all painted areas.

Stage a 1 ½" or 1 ¾" charged hose line dedicated for roof operations, while personnel are on the roof.

Ventilation Instructors and the Assistant Safety Officer must watch all operations. Tolerate no horse play or unsafe acts.

It is also possible to conduct an exercise on natural and mechanical ventilation. This may be done by charging the building with smoke and demonstrating positive pressure ventilation techniques. This process may be valuable during the entire course. One means of generating smoke in a gas fired simulator for this purpose is to use dry hollow core feed hay HCFH and let natural convected currents carry this smoke throughout the area. A chemical smoke generator may also be used for this purpose.

Example: Set up for positive pressure ventilation during interior attack. This has to be highly coordinated.

Step 1 With all exterior doors and window openings covered interior doors open or closed appropriately, a fire is started in the rear of the building and allowed to burn.

Step 2 At a given signal, the vent team will remove the window covers from the fire room. As this is done, the attack team will coordinate their attack with the implementation of positive pressure ventilation. As the smoke is pushed back to the fire room, the attack team can make entry and extinguish the fire in a more tenable environment.

Note: This is a technique of coordinating interior attack and positive pressure ventilation. When correctly implemented, this method of ventilation can be very effective. (See Illustration #6 on Page 32)

This technique can be utilized many times during the course of the day's exercises to remove smoke and heat from the interior fire attack area.

Remember to plan the ventilation exercises to allow all students to have an opportunity to participate.

Speaking points:

- Safety briefing
- Building size up
- Building construction features
- Ventilation principles
- Ventilation terminology
- Ladder placement
- Safe power equipment and tool use
- Photo Voltaic (solar panels or PV panels)

SECTION 14
SCBA CONFIDENCE COURSE

This exercise is designed to provide fire fighters an opportunity to experience basic performance evolutions while utilizing self-contained breathing apparatus (SCBA). This exercise is not designed to teach proper donning and doffing of SCBA. All students should be proficient in SCBA prior to participating in a FC 3B course. This exercise will teach interior firefighting survival by allowing the students the opportunity to gain confidence in proven survival techniques with emphasis on remaining calm and creating a heightened awareness in a firefighting environment. It will also assist fire fighters in getting the maximum performance from an SCBA.

A building or room utilized for this section should be safe and have more than one exit and an escape route large enough to move several students. The area should be dark even before the smoke is introduced. The class size should consist of a maximum of 10 students. All props should be of sturdy construction. Plywood can be used to cover the windows. Installation should allow the covering to be removed without trouble.

Note: If it is necessary to cover a window, use plywood or drywall. The covering must be placed on the outside and only lightly tacked into place for easy removal in case of an emergency. Also, cover all vertical and horizontal openings. If possible, cut a ventilation hole over the smoke room and cover it with plywood. This covering should be placed on the opening without tacking for easy removal if ventilation becomes necessary.

There should also be an interior hose line present with a reliable water source. If one corner of the door is cut out, it can be closed over the hose.

The tighter the area used the smaller and cooler the fire can be to generate the necessary smoke and heat.

A Safety Officer must be present in the room during the exercise.

A crib and/or shopping cart are examples of acceptable methods of producing smoke. Burn materials should be both wet and dry hollow core feed hay (HCFH). A chemical

smoke generator can also be used. Proper chemical smoke shall be utilized. **DO NOT USE FLAMMABLE / COMBUSTIBLE LIQUIDS IN ANY FORM DURING A FC 3B COURSE.**

There shall be an Assistant Instructor or Trainee Instructor in the room to check and monitor the fire, and cool it if necessary, at all times.

All instructors, Safety Officer, and students should have a SCBA on prior to entering the smoke room.

Students are briefed before entering the room. All PPE will be assessed prior to allowing students to participate in the exercise.

Remember safety in this exercise is of paramount importance and will receive priority over all else.

Another method of conducting the SCBA training is to use a maze. This can be set up in an existing building using 1) a charged hose line for the students to follow and 2) a method of obscuring their vision. A safe chemical smoke is preferred for obscuring their vision, however if this is not possible, taping the mask face piece will suffice.

The exercise starts when the student is instructed on how to follow the maze by keeping contact with the hose. An item predetermined to be the victim (traffic cone, empty SCBA bottle etc.) must be located and retrieved by the students during each evolution.

The instructor should keep track of the student's entry and exit times as well as the amount of air consumed for the exercise. As the student exits the drill, give these figures to them. These figures will give an indication of how the students utilize their air.

Set up the maze so that it takes about 15 minutes to complete. All students should be in full protective clothing when participating in the exercise.

Illustration #7 on Page 36 is an example of a typical maze using a three bedroom house.

Instructors wearing SCBA must be inside to assist the students if problems develop. Each student is finished when they exit with the simulated victim. Be creative, but do not create unsafe conditions.

As an added note, have the students tell you how much hose is in the maze. This will give them an opportunity to think while they are traversing the maze.

If time permits, let students having difficulty with the exercise go through the maze a second time.

Per CAL OSHA regulations, have a mask cleaning station set up at the end of this exercise. Make students utilize this process as part of the instruction.

Speaking Points

- Donning and offing the SCBA inside a structure
- Search techniques
- Search tools
- Changing profile
- Buddy breathing
- Loss of air techniques
- Entanglement hazards and techniques
- Forcible exiting
- SCBA emergency procedures
- Visual and audible indicators
- RIC Tactics
- Situational awareness
- Self awareness

SECTION 15
INTERIOR ATTACK EXERCISE

This exercise is designed to provide students with methods and procedures used for direct, indirect, and combination water application on interior building fires.

The structure to be utilized for this exercise must be of solid construction and have more than one escape route. There should also be ample room to manipulate hose lines. Fuel used can be paper, wood, wood pallets, or hollow core feed hay (HCFH).

Prior to starting the exercise, bring students into the building for orientation. Explain what is going to happen, the location of the safety exits, who is the Safety Officer, and any safety precautions you may deem necessary.

STUDENTS MUST BE FAMILIAR WITH THE LAYOUT OF THE PROP. THERE MUST BE NO SURPRISES.

To start the exercise, a Primary Instructor, Safety Officer, Fuel Unit Leader, and four crews must be present.

Assign a crew as the attack crew. All personnel in the attack crew must wear SCBA. The next crew will be the back-up crew. They too will wear SCBA. There must be an equal number of students on both crews. This is in case the back-up crew has to perform rescue on the attack crew. Both crews should have a hose line, each line coming from a different water supply. Each crew member MUST be familiar with the attached nozzles operation. Failure to do this can, and has, caused serious injury.

The next crew is the ventilation crew. They must have SCBA available but not necessarily on unless the situation dictates. They should have pike poles, appropriate ladders, axes, and anything else necessary to perform proper ventilation if, for example, there is going to be a demonstration of positive pressure ventilation.

The last crew is the fuel crew. They work under the direction of the Ignitions Officer. It is their job to refuel after each exercise. They also may need SCBA.

Note: Student crew assignments may vary for this exercise depending on the type of simulator used. Class A fueled towers will require different tactics from the instructor and the students than will gas fired simulators. For either type of simulator there is a need for an attack crew, and a backup crew. The use of a fuels crew and or ventilation crew with be dependant upon the type of prop used.

Illustration #8 on Page 39 depicts what a typical exercise scene may look like.

Speaking Points

- Heat shielding and barriers
- Stages of fire
- Indicators
- Air flows
- Heat transfer
- Horizontal and vertical thermal balance
- Ember production
- Ash Production
- Flame lengths
- Water application
- Production of gases
- Anchor points
- Ventilation
- Overhead control
- Roll over
- Steam production (floor and ceiling)
- Heat indicators

SECTION 16
FIRE CAUSE AND ORIGIN EXERCISE

Another exercise that may be included is the cause and origin exercise. A local investigator may be used as a speaker for this module. If this is done, support will be necessary to accommodate the speaker's preparation and possibly presentation of the course.

To prepare for this exercise in an FC 3B course, the area used should be prepped with either drywall of wood panel applied to the interior walls to create a more realistic area to investigate. It is also recommended that some type of flooring be in place to assist in identification of trailers and lines of demarcation. Carpet works very well for this. Ideally, the rooms used for cause and origin should be furnished as they would be if the structure were inhabited. If this is not possible for whatever reason, the class can still be effectively taught with good lecture and demonstrations in the burn rooms. Furniture to be used for this purpose can be obtained from several sources. Goodwill, the Salvation Army, and the local landfill are good sources.

If possible, each fire, when started, should be video taped. After the students have made a determination as to cause, show them the tape.

The fires should be set as both arson and accidental, i.e., frayed wires under the carpet versus flammable liquids splashed around the room. Utilize local arson investigators as speakers or for recommendations for this section. Five to seven different types of fire sets are preferred.

The fires should be set the day prior to the exercise. Someone should stay at each scene until the students arrive. When setting the fires, proper equipment and personnel should be available to assist the arson personnel.

The cause and origin exercise for firefighters can be conducted as follows. An arson instructor lets the students view each room without disturbing the scene. The students make decisions on how the fire started and spread. At this point, if resources allow, the instructor will take the students to another room set up with a monitor, video player, and chalk/white board.

Each scene is discussed and students can share their thoughts on what they think started the fires. The video is then shown of the actual causes of the fires. After viewing the video, the students are taken back to the fire scenes and the

instructor takes them through the incident. Student groups should be kept small, usually 15 to 20 students.

If only one room of a structure is available for this section, more than one set can be utilized in the same room. The instructor can then walk students through and show indicators and patterns on the various sets in the same room.

Depending on the experience level of the students, it may be appropriate to just walk through the area of your sets and point out indicators and evidence of fire cause. This too can be done by a professional investigator.

Speaking Points:

- Ignition sources
- Incendiary devices
- Evidence preservation
- Indicators
- Burn patterns
- Accelerants
- Documentation

SECTION 17
EXTERIOR ATTACK EXERCISE

The final exercise conducted during a FC 3B course is the exterior attack exercise. This is an all hands exercise utilizing all students from the day's training.

When using a smoke producing type of simulator, be cognizant of smoke drift and exposure issues downwind. Considerations of smoke drift include, but may not be limited to:

- Traffic
- Airports
- Convalescent hospitals and homes
- Neighbors
- Commercial occupancies

Prior to beginning the exterior attack exercise the instructor will brief the instructor cadre of the desired goals and effects to be created upon ignition. This briefing will also include:

- Line placement
- Assignment of instructors to student crews.
- Instructions for the application of water and teaching tips specific to the structure.
- Site specific hazards and or exposures.
- Communications.

The amount of fuel load used and placement will vary based upon the tower and should always be done based upon the final burn plan. Anticipated fire behavior specific to the burn tower should be considered for placement and size of the fire load. This load should be placed to accommodate predetermined objectives and predicted visual impact. Explain to the students what the final burn plan is. This will help them to understand the load placement and water application to accommodate the plan. Use caution not to over-load the structure, this could cause a rapid and unexpected build up of excessive heat as well as deprive the students an opportunity to witness actual fire behavior during the build up phase of the fire.

Students may be used to assist in loading the room for exterior fire attack.

DO NOT USE ACCELERANTS. THE USE OF FLAMMABLE/COMBUSTIBLE LIQUIDS DURING LIVE FIRE TRAINING IS STRICTLY FORBIDDEN.

Place instructional staff with student crews during the final burn. This is an opportunity for students to watch a fire start and spread, and to witness how long it takes to become well involved. It is also a valuable time for the instructors to answer questions about the build up, growth, and spread of fire. This is the perfect opportunity for instructors to predict fire behavior as it occurs in the presence of the students.

The Exterior Attack Exercise is a point in the instruction to show the effectiveness of various streams, including master streams. Adequate amounts of hose streams must be available. There should be a system of control to coordinate all hose streams.

Advance attack lines, knock down the fire, and back out. As the fire builds each time, demonstrate various attack methods. These include direct, indirect, combination, and the blitz attack utilizing a 2 ½" or master stream. The instructor should verbalize the desired effect prior to the application of water through the various attack methods so the students may also look for this effect as they advance lines and apply water. Take the time to discuss the effects of stream management and its effect of the fires behavior at this point. Examples include a fog patterns ability to push fire, the reach of a straight stream and deflection methods, controlling steam production and thermal balance etc…Line size should be discussed at this time as well as applications to different scenarios be given. Continue instruction during the exterior attack exercise until all training value has been utilized to its fullest.

Coach the students to control the fire. Do not allow them to completely extinguish it. This will only create unnecessary delay in the exercise. Take advantage of the opportunity to critique each attack while waiting for the fire to rebuild. Have a good burn plan and execute according to that plan.

After the exercise is complete, allow input from all assistant instructors. Reaffirm what the students have learned from the day's exercises.

Speaking Points

- Fire spread and behavior
- Exterior attack for various fire locations
- Straight stream and fog patterns
- Construction and its influence on fire behavior
- Flashover

- Exposure protection
- Various methods of exterior attack

SECTION 18
SUPPLEMENTAL TOOLS AND ADDITIONAL INFORMATION

Hand Pump Fire Extinguisher

Several years ago, the fire service used a very handy tool called the hand pump or pump can. It is still used in several large cities as a mop-up or attack tool. It is the forerunner of the pressurized water extinguisher. These have been very useful for FC 3B courses.

These pump cans come in three sizes – 2.5, 3, and 5 gallons. The preferred size is the 2.5 gallon size. Most of these extinguishers have a short hose as standard equipment. It is recommended you change the hose to a six foot length. This will give you more flexibility to reach those areas that are not easily accessible. These extinguishers can be purchased from various fire equipment dealers.

Hand pump extinguishers can be used for mop up and overhaul, knocking down a small fire that was not planned, stand by after hose lines have been removed, and for night team patrol.

It is recommended that all FC 3B courses have at least one hand pump extinguisher at the burn site if ordinary combustibles are used. The addition of this tool will make instruction of interior attack much easier. A method of refilling these units should also be available.

Thermal Imaging Camera (TIC)

Another tool that can prove quite valuable is a heat sensing device. There are many on the market and most fire departments use them. The agency sponsoring the burn will probably have one for the course. If not, contact one of the manufacturers of these items and they will probably have a demo for loan.

Construction tools and materials

When conducting the planning session, it would be ideal to identify any other tools and equipment you might need. Supplies that should be kept available should include; dry wall (sheetrock), particle board, plywood, nails, screws, cleaning supplies for SCBA masks, tables and chairs. Tools that may be necessary include; hammers, saws, drills and screw guns, and a portable generator.

A tool of major consideration for a successful FC 3B course is some sort of ignition device. Matches, Lighters, or fusee's will serve this purpose very well.

Burn Fuels

Wood fuels in the form of lumber, pallets, excelsior, or hollow core feed hay (HCFH) may be used for training in acquired structures and permanent burn building props found at training facilities. When using hay, the best type is hollow core feed hay (HCFH) since feed hay does not have chemicals present. When purchasing the hay, be sure to specifically ask for feed hay.

There is a problem that occurs in burn buildings, both live fire and in a simulator building, called thermal shock. This occurs when the temperature in the fire room reaches temperatures above 600°F then is cooled rapidly by an advancing nozzle. The temperature can curve as much as 500°F in a matter of seconds. In a live fire building, this can cause damage to walls and ceilings and destroy the room for future use. In a burn building prop, this sudden shock can cause major damage to the room. It makes sense then, to use less fire load and have a fire that looks real but does not have heat extending throughout the training facility.

Note: Each pallet is capable of producing as much as 450,000 BTU's. This is based on the fact that 1 pound of wood can produce as much as 9000 BTU's. Therefore a fuel crib consisting of 3 pallets can produce as much as 1,350,000 BTU's. This is much more heat than is necessary to instruct in FC 3A or 3B given the variables of room size and rate of heat production.

The purpose of this course is to demonstrate various methods of controlling fire. The instructor must be able to effectively anticipate and demonstrate fire control in a variety of construction types prior to presenting this course to the student.

We have heard instructors say, "I want them (the students), to feel the heat". If this is heard at a FC 3A /3B course, the instructor's qualifications should be questioned, as well as the instructor you hear say, "I don't feel it is a good burn unless I melt a few helmets or burn a few students". The Senior Instructor should remove these instructors from the class immediately and tell them why.

Important Note: DO NOT USE RICE STRAW. The shaft of this type of straw contains a minute spore which is not destroyed during combustion. In fact the spore becomes airborne and can cause damage to the lungs much the same as "valley fever."

HCFH will last for several minutes and makes a crackling sound that adds realism to the situation. HCFH can also be moistened on the top layers to produce a very smoky atmosphere. One of the best tools to use for wetting the hay is the hand pump fire extinguisher. ŧ

There are several methods that can be used with this system to achieve various effects.

Fuel Cribs

On several occasions, the use of shopping carts containing fuels for various exercises has been mentioned. These carts can be used for smoke training or interior attack and is a very effective method for developing a fuel crib. Obtaining shopping carts can be accomplished by asking a local

supermarket. Other items to consider for use as a fuel crib include a military bed spring and frame, 55 gallon drum, or any device that will allow adequate air flow into the crib.

NEVER USE FLAMMABLE OR COMBUSTIBLE LIQUIDS WITH THIS SYSTEM!

If you have any questions on how to use the above information please contact State Fire Training for further assistance.